UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

MAR - 6 1998

ACTION MEMORANDUM

DATE:

SUBJECT: Request for a Removal Action Restart and Ceiling Increase for the Pyridium Mercury Disposal Site No. 1, Village of Harriman, Orange County, New York

FROM: Irmgard P. Huhn, On-Scene Coordinator
Removal Action Branch

TO: Jeanne M. Fox
Regional Administrator

THRU: Richard L. Caspe, Director
Emergency and Remedial Response Division

Site No.: EV

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the removal action restart and ceiling increase proposed herein for the Pyridium Mercury Disposal Site No. 1 (Site), Village of Harriman, Orange County, New York, 10926. The Site is not on the National Priorities List (NPL) and there are no nationally significant precedent-setting issues associated with the proposed removal action. A 12-month exemption and ceiling increase was obtained in the Action Memorandum signed September 26, 1997. The Site continues to meet the criteria for a 12-month exemption.

The Site consists of a residential/commercial property which was backfilled with mercury contaminated industrial waste. Five mobile home trailers, used for residential purposes, formerly occupied the Site. An Administrative Order on Consent (AOC) was issued to Nepera, Inc. and executed by the U.S. Environmental Protection Agency (EPA) on November 28, 1994. Under

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The Site consists of a residential/commercial property which was backfilled with mercury contaminated industrial waste. Five mobile home trailers, used for residential purposes, formerly occupied the Site. An Administrative Order on Consent (AOC) was issued to Nepera, Inc. and executed by the U.S. Environmental Protection Agency (EPA) on November 28, 1994. Under

CONCURRENCES

Name: Pyridium Mercury #1 Init: sb Date: 01/22/98 Filename: A.M.#0143

Symbol	ERRD-RAB	ERRD-RAB	ERRD-RAB	ORC-NYCSUP	ERRD-DD	ERRD-D	DRA	RA
Surname	[illegible]	[illegible]	Salkie	Simon	McCabe	Caspe	[illegible]	[illegible]
Date	2/6/98	2/8/98	2/9/98	2/10/98	[illegible]	2/27/98	[illegible]	3/5/98

the AOC, Nepera Inc. agreed to assist with the relocation of residents in the mobile home trailer park. Following Nepera's completion of the relocation activities, EPA initiated an interim removal action under verbal authorization, to decontaminate and/or dispose of the five mobile home trailers.

On September 25, 1997, an Action Memorandum was approved which authorized site work involving installation and/or repair of security fencing and installation of drainage controls to minimize off-site migration of mercury contaminated soil via surface water runoff.

Activities proposed in this Action Memorandum focus on the excavation and disposal of the contaminated soil. The Site now includes both the residential/commercial property mentioned above as well as that portion of wetlands which is contaminated with mercury in excess of the cleanup level established in Section V below.

The Site meets the criteria for a removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as described in Section 300.415 of the National Contingency Plan (NCP). The funding necessary to mitigate the threats associated with the Site is $1,268,500, of which $926,400 is from the Regional removal allocation. These costs, added to the costs for the initial removal actions ($71,000 and $86,800), bring the total project cost to $1,426,300, of which $1,028,400 is for mitigation contracting.

II. SITE CONDITIONS AND BACKGROUND

The Comprehensive Environmental Response, Compensation and Liability Information System ID Number for the Site is NY0000856237. The activities proposed in this Action Memorandum will be the fourth removal action undertaken at the Site. The first action was initiated in November 1994, by Nepera, Inc. to permanantly relocate the residents. This action was conducted under an AOC. The second removal action was initiated by EPA on January 9, 1995, upon verbal authorization from the Division Director, to address the decontamination and sale, or dismantling and disposal of the five trailers on the Site. Additionally, a fence was installed around the Site to reduce the public's risk of direct contact with hazardous substances. The removal action was completed on April 7, 1995. The third removal action was initiated on September 30, 1997 to repair existing fencing or install new fencing on the property perimeter and implement on-site drainage controls to minimize the migration of mercury contamination off-site.

The actions proposed in this Action Memorandum are necessary to continue site activities to address the threats associated with mercury contaminated soil on the Site. The activities proposed involve excavation, stockpiling and disposal of contaminated soil, post excavation sampling and site restoration. Implementation of these activities will eliminate the threats to public health and the environment associated with the Site.

A. Site Description

1. Removal site evaluation

On August 8, 1994, the New York State Department of Health (NYSDOH) and New York State Department of Environmental Conservation (NYSDEC) discovered a white, clay-like substance during an investigation of a complaint from the owner of a transmission shop located adjacent to the Site. The NYSDEC and NYSDOH collected samples of the waste material for laboratory analysis. Analysis of the samples revealed elevated concentrations of mercury (maximum concentration of 653 mg/kg). Mercury is typically found in soils in this geographic location at levels of less than one mg/kg. This waste is a designated CERCLA hazardous substance and is listed in 40 CFR Table 302.4.

A letter dated September 9, 1994, from the NYSDOH, outlined site conditions and requested that the NYSDEC seek assistance from the EPA in addressing the site-imposed threats to public health, welfare and the environment. The Site was formally referred to EPA for CERCLA removal action consideration by the NYSDEC on September 29, 1994. The referral letter is included in Attachment A, Appendix A.

From October 13 thru 15, 1994, EPA and the Technical Assistance Team (TAT) performed a preliminary assessment (PA) at the Site. The PA included verification of mercury contamination and delineation of the horizontal extent of contamination in surface soils. A total of 54 surface soil samples were analyzed using a Spectrace Model 9000 X-Ray Fluorescence Analyzer (XRF). XRF field screening results identified widespread mercury contamination of the trailer park surface soils. The area of surface contamination was initially estimated to encompass 15,000 square feet.

On October 20, 1994, one composite waste sample was collected by EPA for waste characterization and mercury speciation. For the purpose of waste characterization, the sample was analyzed for Target Compound List (TCL) parameters, Target Analyte List (TAL) parameters and toxicity via the Toxicity Characteristic Leachate Procedure (TCLP). TAL analysis detected concentrations of mercury above 25 ppm, which is the cleanup level recommended by the Agency for Toxic Substances and Disease Registry (ATSDR) (see Attachment B). TCL compounds detected in the waste sample include: methylene chloride, pyrene, phenanthrene, fluoranthene, benzo(k)fluoranthene, benzo(b)fluoranthene, benzo(a)anthracene, chrysene and benzo(a)pyrene. However, these organic compound concentrations are below NYSDEC-recommended soil cleanup objectives. The TCLP results are below the Resource Conservation and Recovery Act (RCRA) regulatory levels for hazardous waste classification. Mercury speciation results indicate that the sample is a chemical substrate contaminated with a mercuric or mercurous salt, not elemental mercury.

On November 17, 1994, the EPA Environmental Response Team (ERT) and the Response Engineering and Analytical Contractor (REAC) collected dust samples from each of the on-site

mobile homes. Analytical results of the sampling event indicate mercury concentrations ranging from 0.84 mg/kg to 26.8 mg/kg; the highest concentration of mercury was detected at the entrance area in mobile home No. 3.

On December 6, 1994, ERT, REAC and TAT collected soil samples from borings to determine the vertical extent of contamination. Soil samples were screened using an XRF for the presence of mercury. Based on XRF data, it is estimated that 4,000 cubic yards of waste and contaminated soil exist on-site.

2. Physical location

The Site is located in a mixed residential/commercial area at the intersection of Route 17M and local Route 71 (Harriman Heights Road) (Attachment A, Appendix B, Figure 1). The property (Block No. 5: Lot No. 2) is bordered on the northwest by an auto transmission shop, on the northeast by Route 17M, on the southeast by wetlands and on the southwest by residential properties. (The wetlands are not formally designated as such on the corresponding U.S. Department of the Interior National Wetland Inventory Map). Five mobile homes were located in the trailer park. Approximately 16 people resided in the mobile homes which vary in size from 400 to 900 square feet. An elementary school is located approximately 1,000 feet north of the Site.

3. Site characteristics

The residential/commercial property encompasses 1.93 acres. The contaminated portion of the residential/commercial property occupies approximately only one acre of the total property area (Attachment A, Appendix B, Figure 2). The Site also includes that portion of the wetlands adjacent to the residential/commercial property which is contaminated with mercury in excess of the cleanup levels established in Section V below. On-site contamination is reportedly from the disposal of mercury-contaminated industrial waste generated by the Pyridium Corporation. Disposal of the waste occurred during the 1940's when the material was used to fill in low-lying areas of the property.

Field investigations indicate that approximately 4,000 cubic yards of waste and contaminated soil are present on the Site.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Mercury is a CERCLA-designated hazardous substance, as defined by Section 101(14). The mercury contaminated waste is visible in surface soils and has been identified in subsurface soils. Site investigations determined that approximately 4,000 cubic yards of waste is present on-site. The waste is unconfined and has migrated from the residential/commercial property into an adjacent wetlands from surface water run off. The security fence surrounding the Site is in

disrepair permitting access to the property. Since the waste is present in surface soils, there is the potential for direct contact with the waste and for the waste to be tracked off-site by humans and animals visiting the Site.

Additionally, a drainage culvert in the wetland area carries water from the Site to a creek located northeast of State route 17M which is directly across from the Site. Laboratory analysis of sediment samples collected downstream of the culvert indicate that the waste is migrating from the Site.

5. NPL status

The Site is not listed on the NPL. The Site has been evaluated by the ATSDR. The health consultation is included in Attachment A, Appendix C.

6. Maps, pictures and other graphic representations

Figures 1 and 2, which are included in Attachment A, Appendix B, illustrate the location and configuration of the Site.

B. Other Actions to Date

1. Previous actions

On October 12, 1994, a public meeting was held in the Village of Harriman to discuss site conditions, present the laboratory results of the August 8, 1994 sampling event and to address community concerns. The meeting was attended by representatives of the Village of Harriman, Orange County Department of Health, NYSDOH, NYSDEC, ATSDR and EPA.

On November 28, 1994, a public availability session was held in the Village of Harriman. The session was attended by representatives of NYSDOH, ATSDR and EPA. Laboratory results of the October 1994 sampling events were made available to the public in addition to discussions on future site specific actions to be performed by NYSDOH, EPA and Nepera, Inc.

On November 28, 1994, Nepera, Inc. signed an AOC with EPA agreeing to fund the relocation of the residents of the trailer park. Nepera initiated relocation settlements to the eligible residents according to federal relocation guidelines.

In December 1994, a Draft Health Consultation Report was prepared by the NYSDOH under a cooperative agreement with the ATSDR. This was finalized on August 28, 1995 and is included as Attachment A, Appendix C. The report states that the Pyridium Site is a public health hazard due to elevated mercury concentrations in soils.

On January 9, 1995, under verbal authorization, EPA mobilized the Emergency Response Cleanup Service contractor (ERCS) and TAT to begin site removal activities. As residents were relocated (in accordance with the AOC), the mobile homes were decontaminated and sold or demolished and disposed of. Prior to the sale of two of the mobile homes, the interiors were decontaminated via removal of all porous materials (carpets, curtains, furniture), cleaning of all hard surface areas and dusting of all duct work. Following decontamination, samples were collected to verify attainment of acceptable interior cleanup levels. The three mobile homes not sold were dismantled on-site and discarded as debris. All utilities (water, sewer, electric) were disconnected and all heating oil and propane storage tanks were removed for disposal/recycle. To minimize unauthorized access to the Site, a five foot fence was installed with warning signs along the northeastern boundary of the property and snow fence was placed around the remainder of the site perimeter. The removal activities were completed on April 7, 1995. The total project ceiling for this action was $100,000.

Site stabilization activities were authorized in the ceiling increase and 12-month exemption Action Memorandum signed on September 25, 1997. Site activities included the identification of property boundaries by a licensed surveyor, delineation soil sampling and meeting with subcontractors to obtain price quotations for the installation of security fence. The stabilization actions proposed in the September 25, 1997 Action Memorandum will not be needed because these health threats will be eliminated through the proposed action.

2. Current actions

EPA is continuing site investigations to delineate the horizontal and vertical extent of mercury contamination. These investigations involve collection of surface and subsurface soil samples to establish precise excavation removal limits. The information will be incorporated into the work plan for the removal activities proposed in this Action Memorandum.

C. State and Local Authorities' Roles

1. State and local actions to date

In August 1994, the NYSDEC and the NYSDOH conducted preliminary investigations at the Site. These investigations involved the collection of soil samples from visibly contaminated areas, sampling indoor and outdoor air, utilizing a mercury vapor analyzer and meeting with the affected residents to discuss public health concerns. During the month of October 1994, the NYSDOH conducted urine mercury screening of the residents residing in the mobile homes. A total of 14 individuals participated in the testing program. All 14 individuals had urine mercury levels within the normal range, below 20 micrograms per liter.

2. Potential for continued State/local response

State and local government agencies are not able to undertake timely and costly response actions to eliminate the threats posed by the Site. Both branches of government will provide support services to EPA as the threats on-site are addressed.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The Site meets the criteria for a removal action under CERCLA as described in Section 300.415(b)(2) of the NCP. The Site poses a health threat to local residents and animals that could come in direct contact with the hazardous substance at the Site. The conditions at the Site continue to meet the 12-month exemption criteria authorized by the deputy Regional Administrator on September 25, 1997.

A. Threats to Public Health or Welfare

The presence of mercury, a CERCLA-designated hazardous substance, at elevated concentrations, has been documented in surface and subsurface soils. Laboratory results of eleven surface soil samples analyzed by Cold Vapor Atomic Absorption identified mercury at concentrations ranging from 0.643 mg/kg to 657 mg/kg. Toxicological data regarding mercury exposure documents the risk of potential kidney and neurological system damage.

The security fence installed during the 1994 removal action is in disrepair. This condition permits the Site to be accessed by unauthorized persons who would come in direct contact with the mercury waste. Furthermore, since contamination is present on surface soil and drainage controls have not been installed, surface water runoff from the Site is causing the migration of contaminants to other unsecured off-site areas. This condition could also result in the public coming in direct contact with mercury waste.

The ATSDR Record of Activity concluded the mercury concentrations detected at the Pyridium Mercury Disposal Site No. 1 pose a potential threat to public health. The health effects of the hazardous substance are presented in Attachment A, Appendix C.

B. Threats to the Environment

Laboratory analysis of soil samples collected during the site investigation verified that mercury is present in the wetlands located adjacent to the residential/commercial property. The concentrations identified in the wetlands range from 13.7 to 38.9 mg/kg. The topography of the residential/commercial property allows migration of contaminants into the adjacent wetlands.

A sediment sample collected at the outfall of a drainage culvert located northeast of the Site, across Route 17M, was analyzed and identified mercury at a concentration of 0.643 mg/kg. This data further indicates that waste is migrating off site.

IV. ENDANGERMENT DETERMINATION

Actual or threatened release of a hazardous substance from the Site, if not addressed by implementing the response action selection in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The scope of work proposed in this action is to excavate and dispose of the contaminated soil on the Site.

A description of the activities proposed for this action are presented below:

i. Excavate and arrange for the off-site disposal of the contaminated soil;

ii. Implement a post-excavation soil sampling plan to verify that soil excavation activities were effective in removing mercury contamination to acceptable levels. The clean up goal for this action is 25 mg/kg (ppm) mercury; and

iii. Backfill excavations with certified clean fill, grade with topsoil and revegetate with an appropriate ground cover;

2. Contribution to remedial performance

The removal action at the Site is consistent with the requirements of Section 104(a)(2) of CERCLA, which states, "any removal action undertaken...should...to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or the threatened release concerned." Since any remedial action undertaken would encompass the elements in this response, this removal action is consistent with any future remedial work.

3. Description of alternative technologies

Excavation and off-site land disposal is the most cost-effective and expedient manner to address the waste on-site.

This method of waste treatment will cause the least disturbance to the surrounding community and has the lowest potential for operational/logistical difficulties.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Since this is a time-critical removal action, this section is not applicable.

5. Applicable or relevant and appropriate requirements (ARARs)

ARARs that are within the scope of this removal action will be met to the extent practicable. Federal requirements applicable for this removal action are RCRA, the Davis Bacon Act, Department of Transportation (DOT) regulations, and Occupational Safety and Health Act (OSHA) regulations.

6. Project schedule

The proposed action can begin as soon as funds are allocated. Mobilization/demobilization, security, soil excavation, disposal and site restoration are expected to be completed within four months, barring inclement weather or other unforeseen circumstances.

B. Estimated Costs

A summary of the estimated costs for the proposed action is presented below. A detailed cost estimate is included as Attachment C.

	Previous Project Costs	Proposed Project Costs	Total Project Ceiling (Rounded)
EXTRAMURAL COSTS			
ERCS	$102,000	$ 926,400	$1,028,400
START	19,700	61,700	81,400
Contingency (20%)	11,900	197,600	209,500
TOTAL EXTRAMURAL	133,600	1,185,700	1,319,300
INTRAMURAL COSTS	24,200	82,800	107,000
TOTALS	**$157,800**	**$1,268,500**	**$1,426,300**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Should no action be taken, or the planned action delayed, the public health risk, especially to nearby residents, will be increased through prolonged exposure to mercury contaminated soil. Furthermore, the off-site mitigation of contaminants, via surface water runoff, will continue and allow for the migration of contaminants into adjoining areas.

VII. OUTSTANDING POLICY ISSUE

None.

VIII. ENFORCEMENT

EPA has not yet completed its investigation into whether one or more Potentially Responsible Parties (PRPs) can be identified for this Site. EPA has met with representatives of the Nepera Chemical Corporation, Inc. (Nepera), the party which as referenced in Section I of the Action Memo, relocated the residents of the trailer park, to inquire whether they would perform this removal action. Nepera, who has not been determined to be a PRP for the Site, declined. EPA is continuing to investigate Nepera as well as other individuals and/or corporations to determine whether any PRPs can be identified to perform all or a portion of this removal action. If a PRP or PRPs should be identified and is/are willing to undertake timely and appropriate corrective action, all or part of the funds requested herein may not be spent. EPA will pursue appropriate planning and implementation of the CERCLA enforcement actions concurrently with the planning and implementation of the time-critical removal action requested herein.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Pyridium Mercury Disposal Site No. 1 in the Village of Harriman, Orange County, New York, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Site conditions continue to meet the NCP Section 300.415(b)(2) criteria for a removal and exemption from the 12-month limit, and I recommend your approval of the proposed restart and ceiling increase of $1,268,500. The total project ceiling, if approved, will be $1,426,300, of which an estimated $1,028,400 will be funded from the Regional removal allowance.

Please indicate your approval and authorization of funding, as per current Delegation of Authority, by signing below.

APPROVAL: _____ **DATE:** 3/5/98
Jeanne M. Fox
Regional Administrator

DISAPPROVAL: _____ **DATE:** _____
Jeanne M. Fox
Regional Administrator

cc: (after approval is obtained)
W. Muszynski, DRA
R. Caspe, ERRD-D
W. McCabe, ERRD-DD
R. Salkie, ERRD-RAB
J. Rotola, ERRD-RAB
G. Zachos, OMBUDSMAN
B. Bellows, EPD
P. Simons, ORC-NYCSUP
R. Gherardi, OPM-FIN
S. Murphy, OPM-FAM
B. Shaw, 5202G
C. Moyik, ERRD-PS
M. O'Toole, NYSDEC
T. Vickerson, NYSDEC
A. Raddant, OEPC
G. Wheaton, NOAA HAZMAT
O. Douglas, START

ATTACHMENT A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

ACTION MEMORANDUM

DATE:

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Removal Action Branch

TO: Jeanne M. Fox
Regional Administrator

THRU: Richard Caspe, Director
Emergency and Remedial Response Division

Site No: EV

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the removal action restart, ceiling increase and 12-month exemption proposed herein for the Pyridium Mercury Disposal Site No. 1 (Site), located in the Village of Harriman, Orange County, New York, 10926. The Site is not on the National Priorities List (NPL) and there are no nationally significant precedent-setting issues associated with the proposed removal action.

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The Site consists of a residential/commercial property which was backfilled with mercury contaminated industrial waste. Five mobile home trailers, used for residential purposes, formerly occupied the Site. An Administrative Order on Consent (AOC) was issued to Nepera Inc., and executed by the U.S. Environmental Protection Agency (EPA) on November 28, 1994. Under the AOC, Nepera, Inc. agreed to assist with the relocation of residents in the mobile home trailer park. Following Nepera's completion of the relocation activities, EPA initiated an interim removal action under verbal authorization, to decontaminate and/or dispose of the five mobile home trailers at the Site.

Activities proposed in this Action Memorandum focus on preventing unauthorized access to the Site and controlling run-off of mercury contaminated soils, via surface water, from the property.

The Site meets the criteria for a removal action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as described in Section 300.415 of the National Contingency Plan (NCP). The funding necessary to mitigate the threats associated with the Site is $86,800, of which $51,000 is from the Regional removal allocation. These costs, added to the costs for the initial removal action ($51,000), bring the total project cost to $157,800, of which $102,000 is for mitigation contracting.

II. SITE CONDITIONS AND BACKGROUND

The Comprehensive Environmental Response, Compensation and Liability Information System ID Number for the Site is NY0000856237. The activities proposed in this Action Memorandum will be the third removal action undertaken at the Site. The first removal was initiated in November 1994, by Nepera, Inc. to permanantly relocate the residents. The second removal action was initiated by EPA on January 9, 1995 upon verbal authorization from the Division Director.
The Action Memorandum documenting the verbal authorization was signed on February 27, 1996. The action addressed the decontamination and sale or dismantling and disposal of the five trailers on the Site. Additionally, a fence was installed around the Site to reduce the public's risk of direct contact to hazardous substances. The removal action was completed on April 7, 1995.

The ceiling increase and 12-month exemption is necessary to continue site activities to address the threats associated with mercury on the Site. The activities proposed involve the following:

* Repair existing fencing or install new fencing on the property perimeter.

* Implement on-site drainage controls to minimize the migration of mercury contamination off-site.

A. Site Description

1. Removal site evaluation

On August 8, 1994, the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC) discovered a white, clay-like substance during an investigation of a complaint from the owner of a transmission shop located adjacent to the Site. The NYSDEC and NYSDOH collected samples of the waste material for laboratory analysis. Analytical results of the samples detected elevated concentrations of mercury (max. 653 mg/kg). Mercury is typically found in soils in this geographic location at levels of less than one mg/kg. This mercury waste is a designated CERCLA hazardous substance and is listed in 40 CFR Table 302.4.

A letter dated September 9, 1994, from the NYSDOH, outlined site conditions and requested that the NYSDEC seek assistance from the EPA to address the site-imposed threats to public health, welfare and the environment. The Site was formally referred to EPA for CERCLA removal action consideration by the NYSDEC on September 29,1994. The referral letter is included as Appendix A.

From October 13 thru 15, 1994, EPA and the Technical Assistance Team (TAT) performed a preliminary assessment (PA) at the Site. The assessment included verification of mercury contamination and delineation of the horizontal extent of contamination in surface soils. A total of 54 surface soil samples were analyzed using a Spectrace Model 9000 X-Ray Fluorescence Analyzer (XRF). XRF field screening results identified widespread mercury contamination of the trailer park surface soils. The area of surface contamination was determined to encompass approximately 15,000 square feet.

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On November 17, 1994, the EPA Environmental Response Team (ERT) and the Response Engineering and Analytical Contractor (REAC) collected dust samples from each of the on-site mobile homes. Analytical results of the sampling event detected mercury concentrations ranging from 0.84 mg/kg to 26.8 mg/kg; the highest concentration of mercury was detected at the entrance area in mobile home No. 3.

On December 6, 1994, ERT, REAC, and TAT collected soil samples from borings to determine the vertical extent of contamination. Soil samples were screened for mercury using an XRF. The subsurface investigation determined that contamination ranges in depth between two feet and six feet below surface grade. It is estimated that 4,000 cubic yards of mercury waste and contaminated soil is on-site.

2. Physical location

The Site is located in a mixed residential/commercial area at the intersection of Route #17M and Harriman Heights Road (Appendix B, Figure 1). The property (Block No. 5: Lot No. 2) is bordered on the northwest by an auto transmission shop, on the northeast by Route #17M, on the southeast by wetlands and on the southwest by a residential lawn. (The wetlands are not formally designated as such on the corresponding U.S. Department of the Interior National Wetland Inventory Map.) Five mobile homes were located in the trailer park. Approximately 16 people resided in the mobile homes which vary in size from 400 to 900 square feet. An elementary school is located approximately 1,000 feet north of the Site.

3. Site characteristics

The property encompasses 1.93 acres. The Site itself, however, occupies approximately one acre of the total property area (Appendix B, Figure 2). On-site contamination is reportedly from the disposal of mercury-contaminated industrial waste generated by the Pyridium Corporation. Disposal of the waste occurred during the 1940's when the material was used to fill in low-lying areas of the property.

Field investigations indicate that approximately 4,000 cubic yards of waste and contaminated soil is present on the Site.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Mercury is a CERCLA-designated hazardous substance, as defined by Section 101(14). Mercury contaminated waste is visible on surface soils and has been identified in subsurface soils. Site investigations determined that approximately 4,000 cubic yards of waste is present on-site. The waste is unconfined and has migrated off-site into an adjacent wetlands from surface water drainage. Since the waste is present in surface soils, there is also the potential for the waste to be tracked off-site by humans and animals visiting the Site.

5. NPL status

The Site is not listed on the NPL. A PA may be conducted to determine the need for a Site Inspection (SI) for possible NPL listing. The Site has been evaluated by the ATSDR. The health consultation is included in Appendix C.

6. Maps, pictures and other graphic representations

Figures 1 and 2 which are included in Appendix B, illustrate the location and configuration of the Site.

B. Other Actions to Date

1. Previous actions

On October 12, 1994, a public meeting was held in the Village of Harriman to discuss site conditions, present the laboratory results of the August 8, 1994 sampling event and to address community concerns. The meeting was attended by representatives of the Village of Harriman, Orange County Department of Health, NYSDOH, NYSDEC, ATSDR and EPA.

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On November 28, 1994, Nepera, Inc., signed an AOC with EPA agreeing to fund the relocation of the residents of the trailer park. Nepera distributed relocation settlements to the eligible residents according to federal relocation guidelines.

In December 1994, a Draft Health Consultation Report was prepared by the NYSDOH under a cooperative agreement with the ATSDR (Appendix C). The report states that the Pyridium Site is a public health hazard due to elevated mercury concentrations in soils. On-site residents are suspected to be at risk of kidney damage through mercury ingestion/inhalation.

On January 9, 1995, under verbal authorization, EPA mobilized Emergency Response Cleanup Service contractor (ERCS) and TAT to begin site removal activities. As residents were relocated (in accordance with the AOC with Nepera Inc.), their mobile homes were decontaminated and sold or demolished and disposed of. Prior to the sale of two of the mobile homes, the interiors were decontaminated via removal of all porous materials (carpets, curtains and furniture), cleaning of all hard surface areas and dusting of all duct work. Following decontamination, samples were collected to verify attainment of acceptable interior cleanup levels. The three mobile homes not sold were dismantled on-site and discarded as debris. All utilities (water, sewer and electric) were disconnected and all heating oil and propane storage tanks were removed for disposal/recycle. To minimize unauthorized access to the Site, a five foot fence was installed with warning signs; along the property front and snow fence was placed around the remainder of the Site perimeter. The removal activities were completed on April 7, 1995.

2. Current actions

Site activities proposed under this removal action are discussed in Section V.

C. State and Local Authorities' Role

1. State and local actions to date

In August 1994, the NYSDEC and the NYSDOH conducted preliminary investigations at the Site. These investigations involved the collection of soil samples from visibly contaminated areas, sampling indoor and outdoor air, utilizing a mercury vapor analyzer and meeting with the affected residents to discuss public health concerns. During the month of October 1994, the NYSDOH conducted urine mercury screening of the residents residing in the mobile homes. A total of 14 individuals participated in the testing program. All 14 individuals had urine mercury levels within the normal range, below 20 micrograms per liter. The state agencies will continue to offer health education services to the affected residents while observing EPA's removal activities.

2. Potential for continued State/local response

State and local government agencies are not able to undertake timely and costly response actions to eliminate the threats posed by the Site. Both branches of government will provide support services to EPA as the threats on-site are addressed.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The Site meets the criteria for a removal action under CERCLA, as described in Section 300.415(b)(2) of the NCP. The Site poses a health threat to local residents and animals that could come in direct contact with the hazardous substance at the Site. High concentrations of mercury are on the ground surface and have migrated off-site by surface water drainage to contaminate larger areas.

A. Threats to Public Health or Welfare

The presence of mercury at elevated concentrations has been documented in surface and subsurface soils. Laboratory results of eleven surface soil samples analyzed by Cold Vapor Atomic Absorption identified mercury at concentrations ranging from 3.74 mg/kg to 657 mg/kg.

Security fence around the Site is inadequate, resulting in unauthorized access to the property and direct contact to mercury waste. Off-site migration of contamination is occurring due to surface water draining from the property. This situation is causing off-site areas, which are unsecured, to become contaminated resulting in other areas where the public can come in direct contact with mercury.

The ATSDR Record of Activity concluded the mercury concentrations detected at the Pyridium Mercury Disposal Site No. 1 poses a public health hazard. The health effects of the hazardous substance is presented in Appendix C.

B. Threats to the Environment

Laboratory analysis of soil samples collected during the SI verified that mercury is present in the off-site wetlands located adjacent to the Site. The concentrations identified in the wetlands range from 13.7 mg/kg to 38.9 mg/kg. Although mercury waste was not observed in surface soil of the wetland, it is believed that waste from the Site is being carried off-site by surface water drainage. Surface soil on-site is graded so that surface water is channeled toward the wetland area.

A sediment sample collected at the outfall of a drainage culvert located northeast of the Site, across Route #17M, was analyzed and identified mercury at a concentration of (0.643 mg/kg). This data further indicates that waste is migrating off-site.

IV. ENDANGERMENT DETERMINATION

Actual or threatened release of a hazardous substance from the Site, if not addressed by implementing the response action selection in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMIT

A. Emergency Exemption

1. There is an immediate risk to public health or welfare or the environment

Surface soil is contaminated with mercury at concentrations that range between 3.7 mg/kg and 657 mg/kg. The Site is unsecured since security fence is missing or is in disrepair. Trespassers to the Site will come in contact with mercury waste.

ATSDR's August 28, 1995 Health Consultation states that the Site poses a public health hazard because inorganic mercury occurs in soil at concentrations which may cause adverse health effects.

Investigations conducted by ATSDR and the NYSDOH indicated that human exposure to inorganic mercury had occurred by dermal contact.

In it's present state, unauthorized access to the Site and to areas of high concentrations of mercury is possible. It has been confirmed that neighborhood children frequent the Site. Repeated handling of contaminated soil increases the likelihood of ingestion. In addition, mercury contaminated soil can be tracked into homes.

Long-term exposure to mercury can damage the kidneys, nervous system and developing fetus.

2. Continued response actions are immediately required to prevent, limit, or mitigate an emergency.

ATSDR and the NYSDOH have evaluated site conditions and associated analytical data and have determined that conditions on-site represent a potential public health hazard. Mercury waste on-site is present in surface soils which are being impacted on a daily basis by environmental conditions. Wind and rain are causing mercury waste to migrate off-site into wetlands and other areas not previously impacted. Continued response actions are necessary to modify site drainage pathways to minimize the off-site migration of waste via surface water runoff.

3. Assistance will not otherwise be provided on a timely basis

Neither State or county government have the resources to mitigate the threats associated with the Site in a timely manner.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The purpose of the current action is to prevent off-site migration of the contaminants and restrict access to the Site.

A description of the activities proposed for this action are presented below:

i. Modify site grades to control off-site surface water drainage.

ii. Install and/or repair chain link fence around the property to restrict access to the Site.

iii. Cap areas of exposed waste.

2. Contribution to remedial performance

The removal action at the Site is consistent with the requirements of Section 104(a)(2) of CERCLA, which states, "any removal action undertaken...should...to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or the threatened release concerned." Since any remedial action undertaken would encompass the elements in this response, this removal action is consistent with any future remedial work.

3. Description of alternative technologies

Not applicable.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Since this is a time-critical removal action, this section is not applicable.

5. Applicable or relevant and appropriate requirements (ARARs)

ARARs that are within the scope of this removal action will be met to the extent practicable. Federal ARARs determined to be applicable for this removal action is the Occupational Safety and Health Act.

6. Project schedule

The proposed action can begin as soon as funds are allocated. Mobilization/demobilization, migration controls and access restraints are expected to be completed within one month, barring unforeseen circumstances.

B. Estimated Costs

A summary of the estimated costs for the proposed action is presented below. A detailed cost estimate is included as Appendix D:

	Previous Project Costs	Proposed Project Costs	Total Project Ceiling (Rounded)
EXTRAMURAL COSTS			
ERCS	$ 51,000	$ 51,000	$ 102,000
TAT	11,000	8,700	19,700
Contingency (20%)	n/a	11,900	11,900
TOTAL EXTRAMURAL	$ 62,000	$ 71,600	$ 133,600
INTRAMURAL COSTS	$ 9,000	$ 15,200	$ 24,200
TOTALS	**$ 71,000**	**$ 86,800**	**$ 157,800**

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Should no action be taken, or the planned action delayed, the public health risk, especially to nearby residents, will be increased through prolonged exposure to mercury contaminated soil. Additionally, water run-off will spread the waste further into adjoining areas.

VIII. OUTSTANDING POLICY ISSUE

None.

IX. ENFORCEMENT

During the month of October 1994, EPA and TAT conducted a title and deed search for the property. Property owner information was obtained from 1894 to the present and is being kept on file.

The on-site waste was reportedly generated during the 1940's by the Pyridium Corporation. Nepera, Inc., currently owns and operates the facility previously operated by Pyridium Corporation. On November 28, 1994, Nepera, Inc. signed an AOC with EPA. Pursuant to the AOC, Nepera Inc., agreed to buy out and assist with the relocation of the trailer park residents. Nepera has disclaimed liability for the Site; EPA is currently investigating its potential liability.

X. RECOMMENDATION

This decision document represents the selected removal action for the Pyridium Mercury Disposal Site No. #1 in the Village of Harriman, Orange County, New York, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Site conditions continue to meet the NCP Section 300.415(b)(2) criteria for a removal, and I recommend your approval of the proposed ceiling increase of $86,800 and 12-month exemption. The total project ceiling if approved will be $157,800, of which an estimated $102,000 will be funded from the Regional removal allowance.

Please indicate your approval and authorization of funding, as per current Delegation of Authority, by signing below.

APPROVAL: _____ **DATE:** 9/25/97
Jeanne M. Fox
Regional Administrator

DISAPPROVAL: _____ **DATE:** _____
Jeanne M. Fox
Regional Administrator

cc: (after approval is obtained)
W. Muszynski, DRA
R. Caspe, ERRD-D
W. McCabe, ERRD-DD
R. Salkie, ERRD-RAB
J. Rotola, ERRD-RAB
G. Zachos, OMBUDSAN
B. Bellow, EPD
P. Simon, ORC-NYCSUP
R. Gherardi, OPM-FIN
S. Murphy, OPM-FAM
B. Shaw, 5202G
C. Moyik, ERRD-PS
M. O'Toole, NYSDEC
T. Vickerson, NYSDEC
A. Raddant, OEPC
G. Wheaton, NOAA HAZMAT
O. Douglas, START

APPENDIX A

To	Richard Salkie	From	AL Rockmore
Co./Dept.	EPA	Co.	NYDEC
Phone #	(908) 321-6658	Phone #	(518) 457-9280
Fax #	(908) 906-6182	Fax #	(518) 457-7143

New York State Department of
50 Wolf Road, Albany, New York, 12

Langdon Marsh
Commissioner

SEP 29 1994

Ms. Kathleen C. Callahan
Director
Emergency & Remedial Response Division
United States Environmental
Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

Dear Ms. Callahan:

Re: Pyridium Mercury Disposal Site
Harriman (V) Orange County, N.Y.

I have enclosed a copy of a letter from the New York State Department of Health, dated September 9, 1994, regarding confirmed mercury contamination in the soil beneath five trailer homes at the referenced location in the Village of Harriman Orange County, New York.

The trailer park is located near Nepera, Inc., Harriman, which is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Code #3-36-006. We are presently trying to determine if the mercury contamination is related to the Nepera Site.

However, in the meantime, we hereby request that the USEPA conduct an Emergency Removal Assessment at the referenced location and initiate whatever response action is warranted by the findings of such an assessment and are authorized by CERCLA/SARA.

If you have any questions regarding this request, please contact Alan Rockmore, P.E., of my staff, at (518) 457-9180.

Sincerely,

Michael J. O'Toole, Jr.
Director
Div. of Hazardous Waste Remediation

Enclosure

cc: A. Carlson, NYSDOH
R. Salkie - USEPA, Edison, New Jersey
G. Zachos - USEPA, Edison, New Jersey
J. Witkowski - USEPA, Edison, New Jersey

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Center for Environmental Health 2 University Place Albany, New York 12203-3399

[illegible]
Commissioner
[illegible]
Executive Deputy Commissioner

OFFICE OF PUBLIC HEALTH
Lloyd F. Novick, M.D., M.P.H.
Director
Diane Jones Ross
Executive Deputy Director
William N. Stasiuk, P.E., Ph.D.
Center Director

September 9, 1994

Mr. Michael J. O'Toole, P.E., Director
Division of Hazardous Waste Remediation
NYS Department of Environmental Conservation
50 Wolf Road, Room 212
Albany, New York 12233

RE: Mitigating Potential Exposures
Pyridium Mercury Disposal Site
NYSDOH Site #336821N
(V) Harriman, Orange County

Dear Mr. O'Toole

As you know, both our agencies recently learned that five residential trailer homes sit over chemical wastes near the corner of Routes 17M and 71 in the Village of Harriman, Orange County. Within the five trailers live twelve residents including an expectant mother and her four year old son. The waste materials, suspected to be calcium sulfate and mercuric sulfide generated by the former Pyridium Corporation (presently Nepera, Inc.), were allegedly dumped during the late 1940's. Testing by the State has revealed significantly elevated levels of mercury in the surface soils and surface wastes ranging from 110 parts per million (ppm) to 653 ppm with an average mercury concentration of 258 ppm. Mercury is typically found in soils at levels less than 1 ppm. Residents have reportedly encountered the waste materials in recurring sinkholes/subsidences on the property, within soil excavations for fence posts and sewer lines, while gardening, and during wet conditions when their parking area turns milky-white. Allegedly children, now grown, had used the clay-like material as if it was "Playdoh."

Exposure to either inorganic or organic mercury can permanently damage the brain, kidneys, and developing fetus. The most sensitive target of low-level exposure to inorganic mercury appears to be the kidneys. Exposure to mercury in the soil can occur through a number of routes. There is the potential for direct oral exposure via ingestion of soil, dust, and garden produce grown in contaminated soil. Mercury can be absorbed into the body via dermal contact through activities associated with soil disturbances such as gardening, yard work, and play. There also exists the potential for inhalation of mercury particulates and mercury vapor.

The elevated levels of mercury in soil are a public health concern. To minimize potential human exposure to these accessible chemical wastes, residents have been advised to avoid physical contact with their yard soils which contain the easily distinguishable white waste material. Vegetable gardening is not recommended. These temporary advisories should be followed by a timely permanent solution. However, Extraction Procedure Toxicity testing by the New York State Department

of Environmental Conservation's contract laboratory did not confirm the presence of "hazardous waste" as legally defined by the State. Therefore, as I understand the process, State Superfund monies cannot be spent on any site-related activities that may be needed.

Consequently, the State should seek assistance from the United States Environmental Protection Agency (EPA) to expedite this matter for the long-term welfare of the concerned residents as well as for the protection of the environment. To that end, this Department is in the process of preparing a health consultation, which will be reviewed by the federal Agency for Toxic Substances and Disease Registry (ATSDR). We expect conditions at the site to meet the ATSDR's definition of a public health hazard. We will be forwarding a health consultation as soon as possible. In the meantime, the ATSDR and the EPA have been advised of the situation.

Should you wish to discuss this issue further, do not hesitate to contact me or Mr. Steven Bates at (518) 458-6310.

Sincerely,

G. Anders Carlson, Ph.D.
Director
Bureau of Environmental Exposure Investigation

sg/94252PRO0019

cc: Dr. N. Kim
Mr. R. Tramontano/Mr. R. Svenson/Mr. F. Mrozek
Dr. E. Horn/Dr. D. Luttinger/Ms. P. Fritz
Ms. N. Knapp, Director
Mr. S. Bates/Mr. M. VanValkenburg
Mr. M. Knudsen, MDO
Mr. M. Schleifer - OCHD
Mr. C. Goddard - DEC
Ms. S. McCormick/Mr. C. Magee DEC
Mr. D. Eaton - DEC
Mr. A. Klauss - DEC, Region 3
Mr. A. Block/Mr. S. Jones - ATSDR
Mr. W. McCabe - EPA, Region 2

ATTACHMENT B

- Author Information -

Author: Steven Jones Action Date: 05/22/95
User ID: SXJ6 Time: 08:00 AM

- Site Specific Information -

Name: PYRIDIUM MERCURY DISPOSAL
Address: ROUTE 17M City: HARRIMAN
County: ORANGE State: NY Zip Code:
CERCLIS #: CRS #: 20EV Region: 02 Congr. District: 00

- Site Status -

(1): NPL X Non-NPL RCRA Non-Site Specific SACM Federal*
(2): Emergency Response Remedial X Removal Other:

- Activities -

Incoming Call	Public Meeting*	1 Health Consult*	Site Visit*
Outgoing Call	1 Other Meeting	Health Referral	Info Provided
Confrnce Call	1 Data Review	Written Respons	Training
Incoming Mail	Trip Report	Worker Health	Tech Assist
Immed Removal	Other Activity:		

- Requestor and Affiliation -

Requestor: ERIC WILSON
Affiliation: EPA, OSC-REGION 2
Work Phone: (908)906-6991 Other Phone: ( ) -
Address:

County: Congressional District: 00

- Contacts and Affiliations -

KEN ORLOFF	ATSDR, DHAC/EICB
MARK MADDALONI	EPA, RISK ASSESSOR
PAT FRITZ	STATE HEALTH, NYSDOH

Program Area: Public Health Consultation

Enclosures: N

CC: A. Block
D. Harper
K. Orloff
M. Maddaloni, USEPA
P. Fritz, NYSDOH
E. Wilson, USEPA

PYRIDIUM MERCURY DISPOSAL Action Date: 05/22/95

- Narrative Summary -

The USEPA Removal Program has requested that ATSDR evaluate the health implications of using a cleanup level of 25 mg/kg of mercury in residential soil at the Pyridium Mercury Disposal (#1) site, in Harriman, New York. The site formerly consisted of five trailer homes that were placed on an area where mercury waste had been buried. The highest concentration of mercury found in residential soil was 653 mg/kg. Speciation was performed and the mercury was found to be in an insoluble inorganic salt. The trailer homes have been relocated, and the USEPA is preparing to perform a removal of contaminated soil at the site.

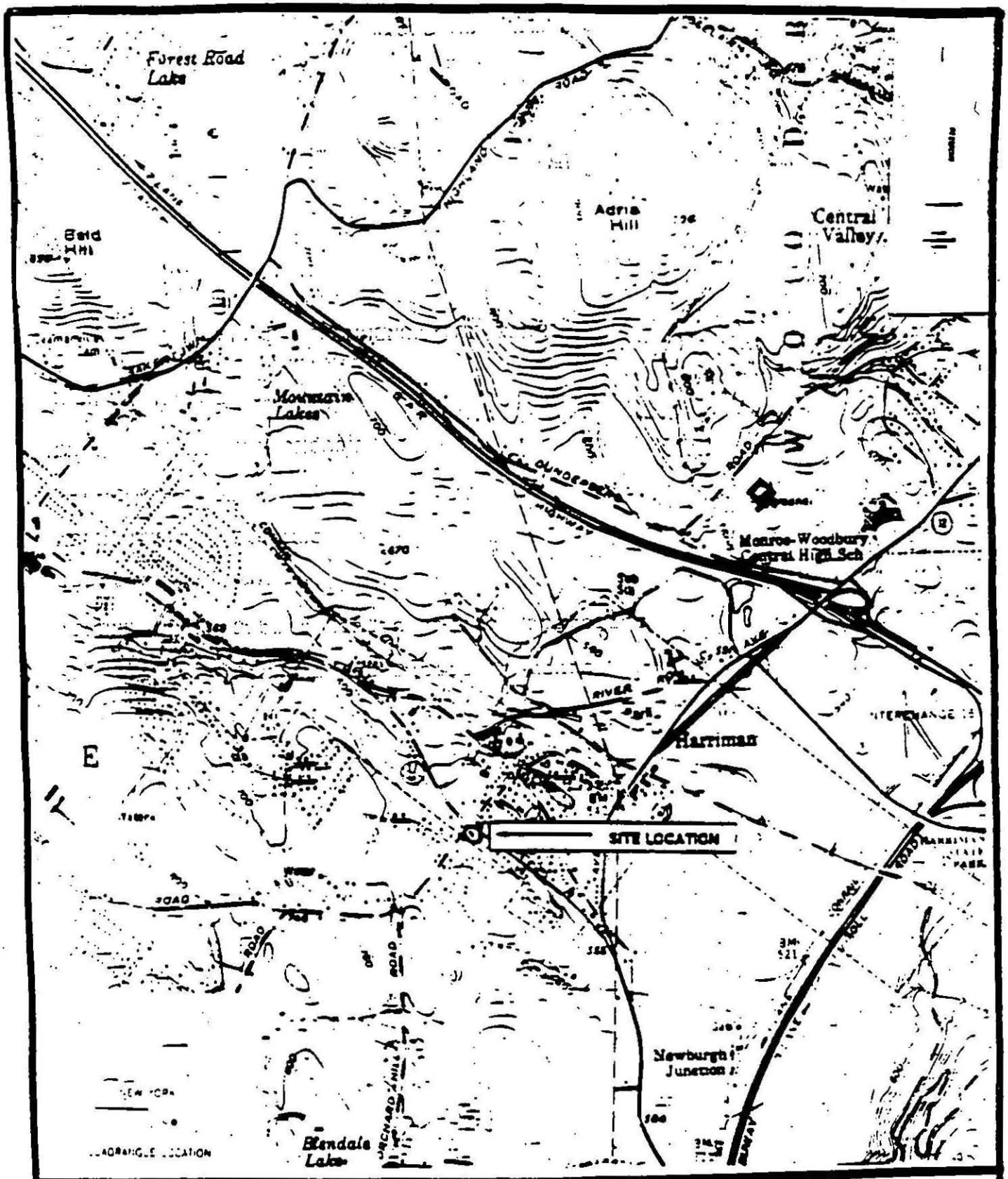
- Action Required/Recommendations/Info Provided -

Based on a residential scenario, the 25 mg/kg contaminant level that will be left in place at the site would not represent a health concern to any future residents that may inhabit the area. ATSDR is available to review any new sampling data that may be generated at this site during the course of the removal, or afterward.

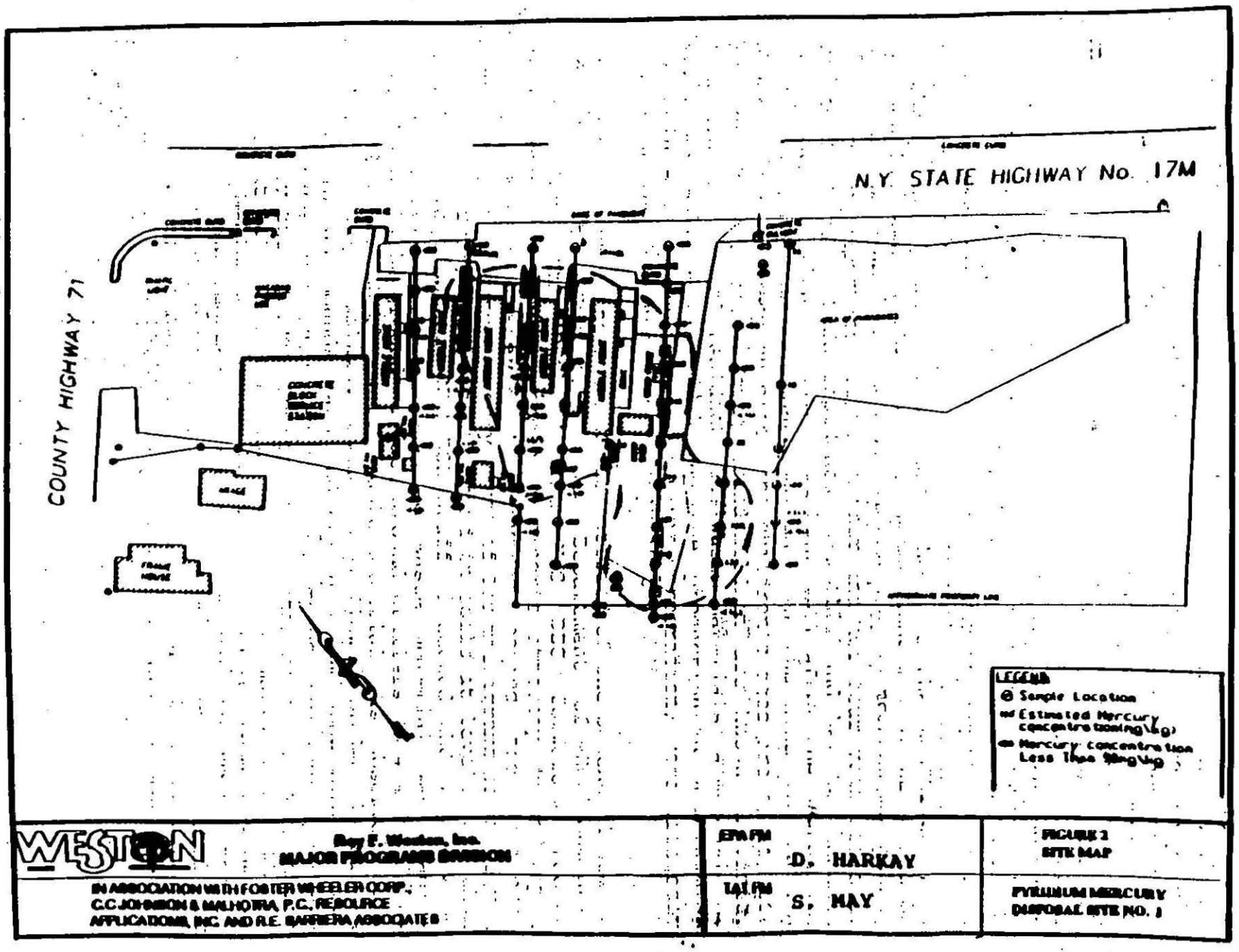
Signature: _____ Date: 7/20/95

Concurrence: Kenneth G. Orloff, Ph.D. Date: 7/14/95

ATTACHMENT C



Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM D. HARKAY	FIGURE 1 SITE LOCATION MAP
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES	TAT PM S. MAY	PYRENIUM MERCURY DISPOSAL SITE NO. 1


N.Y. STATE HIGHWAY No. 17M
COUNTY HIGHWAY 71
LEGEND
Sample Location
Estimated Mercury concentration (µg)
Mercury concentration Less Than 50ng/kg
WESTON
Roy F. Weston, Inc.
MAJOR PROGRAMS DIVISION
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C. JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. BARRERA ASSOCIATES
D. HARKAY
S. MAY
FIGURE 2
SITE MAP
PYRANOL MERCURY DISPOSAL SITE NO. 1

APPENDIX C

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Agency for Toxic Substances
and Disease Registry

Memorandum

Date August 29, 1995

From Arthur Block
Sr. Regional Representative

Subject **Final Health Consultation for Pyridium Mercury Disposal Sites #1/CERCLIS NO. NYD0000856237 and #2/CERCLIS NO. NYD000162850, Harriman, Orange County, NY**

To

SEE DISTRIBUTION BELOW

Attached are copies of the August 28, 1995, Health Consultation for the above sites prepared by the New York State Department of Health (NYSDOH) under cooperative agreement with the Agency for Toxic Substance and Disease Registry (ATSDR).

Comments on the draft documents previously sent to your office have been reviewed and incorporated, where applicable and indicated on the certification page contained within the health consultation, ATSDR has reviewed the consultation and concurs with its findings.

If you have any questions or comments regarding the content of this document, please contact my office at extensions 7-4305 or 7-4306.

Attachments

Distribution:

Kathleen Callahan, Director, EPA/ERRD
Richard Salkie, Associate Director, EPA/ERRD/REPP
Dennis Santella, EPA/ERRD/PSB
George Zachos, EPA/ERRD/RAB
Joseph Rotola, ERRD/RAB
Dan Harper, ATSDR/ORO
Bob Williams, ATSDR/DHAC
Greg Ulirsch, ATSDR/RPB
ATSDR/DHAC/PERIS
Lani Rafferty, NYSDOH

HEALTH CONSULTATION

PYRIDIUM MERCURY DISPOSAL SITE #1
HARRIMAN, ORANGE COUNTY, NEW YORK
CERCLIS NO. NY0000856237

August 28, 1995

Prepared by:

New York State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

TABLE OF CONTENTS

BACKGROUND AND STATEMENT OF ISSUES

The New York State Department of Health (NYS DOH) through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) has reviewed information and analytical data from the Pyridium Mercury Disposal Site #1 to determine if there is a public health threat associated with exposure to mercury. The Pyridium Mercury Disposal Site #1 (Figure 1, Appendix A) is in the Village of Harriman, Town of Monroe, Orange County, near the corner of Routes 17M (Ramapo Avenue) and 71 (Harriman Heights Road). The area of concern (Figures 2A and 2B, Appendix A), which is about one acre in size, includes five, single-family trailer homes. The site, on record as the McGill Trailer Park, is under permit from the Orange County Health Department as a regulated mobile home park. The property is bounded to the northwest by an auto transmission shop, to the southwest by a residential lawn, to the southeast by wetlands and to the northeast by Route 17M. The five trailers are occupied by sixteen residents, including an expectant (12/94) mother and her four year old son. Three of those sixteen residents, a mother and her two teenage sons, moved in with a current resident well after the wastes had been identified and residents warned. Of the nine parents and seven children living on-site, the children's ages are 4, 14, 16, 17, 20, 28 and 31. Young grandchildren are known to visit. According to a local resident, the waste materials, a mercuric or mercurous salt generated during the production of niacinamide (vitamin B-3) by the former Pyridium Corporation, were allegedly dumped during the late 1940's (1947-1948).

On August 8, 1994, the NYS DOH was notified of the potential health concern by the New York State Department of Environmental Conservation (NYS DEC). The NYS DEC forwarded recent correspondence from the property owner's attorney describing a white clay-like material (discovered behind the trailers) containing an elevated mercury level of 238 milligrams per kilogram (mg/kg). Mercury is typically found in soils at levels less than 1 mg/kg. In response, NYS DOH staff inspected the property on August 9, 1994. The suspected waste material was readily identified at the ground surface around trailers 3, 4 and 5. The easily distinguishable white waste material was observed in a sinkhole, between walkway steps, in a flower garden, beneath a trailer, in ant mounds, and underlying a few vegetable plants. Four surface (0-1 inch) soil/waste samples were collected and analyzed by the NYS DEC laboratory for total mercury. Mercury was detected at 110 mg/kg in a flower garden, 170 mg/kg in a sinkhole, 230 mg/kg behind a storage shed and 320 mg/kg between sidewalk steps. At the request of the NYS DOH and the ATSDR, the US Environmental Protection Agency (US EPA) later contracted for further laboratory analysis (i.e., speciation) of the wastes. The material was identified as inorganic mercury: a mercuric or mercurous salt.

Some of the residents interviewed by NYS DOH staff during the August 9 visit reportedly had contact with the waste material when gardening and digging fence post holes. One parent, who has lived on-site for about 25 years, said that while her children were growing up, they played with the clay-like waste as if it were modelling clay.

On August 11, 1994, NYS DEC staff collected additional environmental samples to determine if the waste materials could be classified as "hazardous waste" according to NYS DEC's legal definition. By NYS DEC's definition at that time, a mercury waste sample would be regarded as a "hazardous waste" if the Extraction Procedure Toxicity (EPTox) analysis of the sample detected a concentration of the metal at or above 200 micrograms per liter (mcg/L). The EPTox test is used to determine the likelihood that mercury will leach from the waste and contaminate groundwater. The EPTox test alone does not determine if a chemical concentration in soil or waste is a public health concern. Six soil/waste samples and one surface water sample were taken. EPTox results for mercury in the six soil/waste samples ranged from 0.1 mcg/L to 20.0 mcg/L, well below the NYS DEC action level. Total mercury analyses were also performed. Concentrations detected near the trailers were: 198 mg/kg in a sinkhole at 18 inches below grade; 230 mg/kg in the same sinkhole at 6 inches below grade; 396 mg/kg beneath trailer #3; and 653 mg/kg immediately next to trailer #3 beneath (1-4 inches) a three plant vegetable garden. Mercury was detected in the stone/soil driveway at 4.6 mg/kg and at 0.92 mg/kg in the bank of a stream running through the adjacent wetlands. Mercury was detected in a water sample from a culvert draining the wetlands at a level of 0.13 mcg/L.

On August 17 and 18, 1994, NYS DOH staff monitored indoor and outdoor air using a portable, instantaneous-reading mercury vapor analyzer (Jerome Model 411). Due to instrumentation problems, the data collected at that time are questionable and, therefore, could not be used to adequately evaluate air quality.

Residents rely on the Village of Harriman municipal water supply for drinking water. These wells are not close to this site. The village water is regularly monitored to ensure that it meets State drinking water standards for public supplies. The service connections from the watermain to the trailers likely pass through buried waste materials. Entry of contaminants into the buried water pipes is unlikely. Should there be a crack, break, breach, or compromise in the integrity of the waterline piping, positive pressure within the pipes would force water out rather than allow contaminants to seep in. A major break in a waterline would be readily noticed by residents through a loss of water at the tap and by discolored (i.e., dirty) water.

DISCUSSION

Mercury is present at higher than normal levels in surface soil and surface wastes at the Pyridium Mercury Disposal site. Exposure to mercury in surface soil and surface waste may occur by accidental eating of soil and dust, eating of garden fruits and vegetables grown in contaminated soils, skin contact or breathing of mercury contaminated dust or vapor. Children generally eat greater amounts of soil and dust than adults. This is especially true for preschoolers because they tend to put their hands or fingers in their mouths or for children with pica (an unreasonable craving), in this case, for soil. Those children who repeatedly handle the waste material would have a high likelihood of ingesting the mercury waste which could stick to their hands. Mercury contaminated soil can also be tracked into the home on shoes and left on floors and surfaces where people could come in contact with it. Indirect exposure for an infant can occur from eating contaminated breast milk if the mother were exposed to mercury.

Long-term exposure to mercury can damage the kidneys, nervous system and developing fetus (baby). The most sensitive target organ for low-level inorganic mercury exposure appears to be the kidneys.

Health comparison values are used to assess if further evaluation of the soil is needed. Several factors are considered in the evaluation including soil ingestion rate, the size and age of the exposed individual, length of exposure and the health effects data. A health comparison value for mercury in soil is the mercury concentration in soil which would provide, by ingestion, a dose of mercury equal to the daily exposure below which adverse health effects are unlikely to occur. A contaminant at concentrations exceeding a health comparison value does not mean that either exposure to the contaminant or adverse health effects have occurred or will occur since a margin of safety is built into the value.

Health comparison values are developed assuming worst case exposure, i.e., the greatest possible exposure. Using soil ingestion rates for children with pica will overestimate soil ingestion rates for the general public.

Soil mercury concentrations identified at the site range from 110 to 653 parts per million (ppm). Table 1 (Appendix B) contains soil health comparison values for inorganic mercury. The soil mercury concentrations at the site exceed some of the health comparison values. Therefore, the soil concentrations of mercury at the Pyridium Mercury Waste Disposal Site #1 warrant further characterization and evaluation of exposure pathways and the potential for adverse health effects in individuals who may have been exposed to the waste materials.

A child with pica has the highest exposure and, based on the highest soil mercury concentration (653 ppm), is at high risk of having adverse kidney effects. Children without pica and adults are at minimal risk of having adverse kidney effects. Fruits and vegetables grown in contaminated soil are an additional source of exposure. Mercury levels are higher in plants grown in contaminated soil than in those grown in soil which is not contaminated. Eating such plants could contribute additional mercury to the diet.

On October 26, 1994, as recommended by the ATSDR's Health Activities Recommendation Panel, the NYS DOH conducted urine mercury screening of the residents living in the five mobile homes. A total of 14 individuals participated in the testing which involved the collection of first catch (first thing in the morning) urine samples. Analyses were performed by the NYS DOH Wadsworth Center for Laboratories and Research. All 14 of these people had urine mercury levels within the normal range, below 20 mcg/L. Two residents were not included in the testing because they moved away on their own and could not be located.

The residents' urine mercury screening results indicate exposure has not caused an increase in mercury levels in the body to levels of concern for adverse health effects. The soil mercury concentrations at the site provide a source for exposure which could produce health effects in individuals whose activities lead to greater contact with the waste material.

On May 5, 1995, the NYS DOH sent copies of this health consultation to known interested parties requesting concerns and comments on the report by June 16, 1995. The NYS DOH received two comments which are responded to in Appendix D.

CONCLUSIONS

Based on the information reviewed, the NYS DOH in consultation with ATSDR concludes the following:

1. Based on ATSDR's present public health hazard category classification (Appendix C), the Pyridium Mercury Disposal Site #1 is a public health hazard because inorganic mercury occurs in soil at concentrations which may cause health effects. Residents, particularly preschool children who may eat or play with contaminated soil and residents eating plants grown in the contaminated soil, are at risk of kidney damage due to the mercury contamination at the Pyridium Mercury Disposal Site #1.

2. Based on interviews with residents, exposure to inorganic mercury has occurred by dermal contact.

3. The nature and extent of contamination at this site has not been completely characterized. Contamination other than inorganic mercury may be present within subsurface fill materials. Sampling should extend outward and downward and include groundwater.

4. Based on the results of the recent urine mercury screening, follow-up testing does not appear necessary at this time. The NYS DOH does not plan, at this time, to track previous site residents to conduct urine/mercury analysis since the urine/mercury levels of the current site residents (those most likely at risk of exposure) were within the normal range. In addition; it is unlikely that mercury would be detected above the normal range in persons exposed several months before the urinary mercury testing because mercury leaves the body over time.

RECOMMENDATIONS

1. Measures should be taken to prevent exposures to yard soils which contain the mercury wastes. Dissociate (i.e., remove) all the residents, especially the expectant mother and her young child, from the wastes to prevent exposures that could damage their kidneys or neurological systems.

2. To evaluate exposure to mercury in the homes, dust samples should be collected within the trailers.

3. Completely characterize the nature and extent of contamination at the site. A comprehensive analysis of the wastes should be performed. Sampling of soils, wastes, and groundwater should extend outward and downward to determine areas requiring future remedial actions. Subsurface investigations might potentially identify other types of chemical wastes used as fill, or find buried drums, or detect groundwater contamination.

4. The company or agency that performs the additional environmental sampling should work with the NYS DOH so that sampling design and detection levels are appropriate to base further public health decisions upon.

5. Impose deed restrictions on the property, in the absence of waste removal, to prevent possible disturbance and contact with buried wastes.

HEALTH ACTIVITIES RECOMMENDATION PANEL RECOMMENDATIONS

The data and information developed in the Health Consultation for the Pyridium Mercury Disposal Site #1, Harriman, New York, has been

reviewed by ATSDR's Health Activities Recommendation Panel (HARP) to determine appropriate follow-up health actions. Because of past and current exposure to mercury-contaminated residential soils, the panel recommended this site for follow-up health activities. Specifically, those persons exposed should have urine samples collected and analyzed for the presence of mercury. In addition, the HARP also determined that community health and health professions education are indicated. The NYS DOH is currently conducting site-specific education activities at the site. Other health activities may be needed as more information about actual exposures and the nature of the waste materials are determined.

PUBLIC HEALTH ACTIONS

Public Health Actions Taken

1. The NYS DOH has held two public meetings and a public availability session since August 1994 to provide information to the community about the site and to address health-related concerns.

2. The NYS DOH collected urine samples from the 14 residents currently living on-site. The samples were analyzed for mercury by the NYS DOH Wadsworth Center for Laboratories and Research. All 14 of these people had urine mercury levels within the normal range, below 20 mcg/L. All individuals and their physicians were provided with a copy and explanation of the urine sample results.

3. The site residents' physicians were provided with educational materials regarding the toxic effects associated with exposure to mercury.

4. NYS DOH physicians talked to several members of the community, on an individual basis, about health concerns related to the site.

5. The residents moved off-site by March 1995. Residents have been financially compensated for relocation expenses by Nepera, Inc. who currently occupies the former Pyridium pharmaceutical facility.

Public Health Actions Planned

1. The NYS DOH will review all site-related investigation reports and health-related information and, if necessary, hold additional public meetings.

2. The NYS DOH will continue to investigate reports of the existence of other similar sites in the community.

CERTIFICATION

The Health Consultation for the Pyridium Mercury Disposal Site #1 was prepared by the New York State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

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The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.

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